



## Determinants of the use of various control mechanisms in US–Chinese joint ventures

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### Abstract

This study of US–Chinese joint ventures examined the effects of relative partner knowledge and specific asset investments on the usage of various types of control mechanisms. These controls included expatriate staffing, socialisation practices, delegated decision-making responsibilities, parent company communications and manager performance incentives. Based on field visits and survey data, we found that partner knowledge and specific asset investments influenced a broad set of controls. Whilst the US joint venture partners considered controls to be particularly useful for the selective transmission and protection of their knowledge, the Chinese partners viewed these same controls as a means to selectively share and protect their specific asset investments in the ventures.

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### Introduction

Foreign direct investment in China has grown dramatically in the past decade, reaching US\$52.7 billion in 2002 (People's Daily, 2003). Given China's recent entry into the World Trade Organisation, it is anticipated that future foreign direct investment will increase 15–20% annually (China Statistical Yearbook, 2002). Although joint ventures (hereafter JVs) between overseas companies and domestic firms remain one of the predominant modes of entry into China, recent empirical evidence from firms such as Rockwell, Caterpillar, Kodak, and General Motors suggests that local 'environmental unpredictability, lack of bureau-

cratic transparency and partner unreliability' make the management of JVs difficult (Cooper & Johnson, 2000, p. 7). The lack of effective rule of law heightens these concerns for management (Su, 1999). Surveys suggest that between one third to one half of JVs are unprofitable (Cooper & Johnson, 2000).

Despite the poor financial results of so many Chinese JVs, no consensus has emerged as to the reasons for such lacklustre performance. One recently proposed explanation among others suggests that the management controls that are implemented often do not capture the unique contributions of the alliance partners (Child & Yan, 1999; Yan & Luo, 2001). For example, each JV partner may contribute unique knowledge such as technical know-how and/or specialised assets such as machinery that are difficult to substitute or independently develop without the other partner.

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Knowledge is considered to be an intangible asset while specialised assets are considered to be specific or non-transferable outside of the venture. In either case, the market value of these assets outside of the alliance is difficult to objectively determine. This limits the effectiveness of equity ownership as a control determinant. The lack of an effective rule of law to protect such contributions via contractual stipulations compounds the issue. According to Geringer and Frayne (1990, p. 104), 'Parents are often unable to rely solely on their (equity) ownership position and related formal controls to ensure that their objectives are adequately considered, instead requiring recourse to other modes of influence'. It appears to be essential that both foreign and local partners have a clear and implicit understanding of effective management controls beyond the initial JV agreement contract. Discussants of these challenges have concluded that while critical to success JV controls remain largely unexplored and poorly understood (Chalos, O'Connor, & Xu, 1999; Child & Yan, 1999; Inkpen & Beamish, 1997).

This study examines unexplored determinants of the use of JV controls in US–Chinese JVs suggested by the above literature and our own field results. We examine the proposition that the use of specific JV control mechanisms are motivated not so much by partner equity as by the selective sharing and protection of intangible partner knowledge and assets that are specific to the JV. These asset contributions determine the competitive advantage of the venture (Beamish & Delios, 2001; Dyer & Singh, 1998; Yan & Luo, 2001). Following calls by JV researchers (Hitt, Dacin, Levitas, Arregle, & Borza, 2000), this study examines the effect on JV controls of partner knowledge sharing and protection (Inkpen, 1995; Kogut, 1988) and specific non-transferable asset investments in the JV (Beamish & Banks, 1987; Hennart, 1991; Williamson, 1985). We examine relationships from the perspective of the US and Chinese partner. Few studies have considered the perceptions of both local and foreign partners with regard to management control issues. Such an investigation is critical to developing an understanding of how each partner perceives and uses controls in the management of the venture.

The remainder of the paper is organised as follows. The actual controls that are used in JVs are first described. Partner factors that may affect these controls are proposed. Specifically, the relationships of partner equity ownership, relative knowledge and specific non-transferable asset investments to management controls are hypothesised. The research methods explain the basis for the measurement and validation of the survey instrument. The survey results report the statistical relationships between equity ownership, partner knowledge and asset investments specific to the venture for each control. The paper concludes with a discussion of the implications of the dissimilar control perceptions that exist between the US and Chinese JV respondents.

### **Theory development**

A joint venture agreement legally creates a JV through a contract and identifies the major rights and obligations of the participants. The JV agreement typically identifies the provisions for management and the performance of JV obligations, including the transfer of knowledge. However, given contractual limitations, joint venture partners typically rely on various control mechanisms. These controls serve to influence behaviour in areas that could not be included in the JV agreement and to ensure the fulfilment of parts of the agreement that are difficult to legally enforce. The aim of such controls is to align partner differences and to promote a better understanding of the intangible strengths and relationships that each partner brings to the alliance.

Previous studies of alliances have examined control mechanisms within the framework of cultural controls, behavioural actions and outcome results controls (Dekker, 2004; Groot & Merchant, 2000; Mjoen & Tallman, 1997). Broadly speaking, as discussed in the literature: (i) cultural controls encourage the alignment of partner values and interests; (ii) behavioural controls direct and monitor managers; and (iii) output controls motivate managers to meet strategic goals and objectives (Eisenhardt, 1985; Merchant, 1998; Ouchi, 1980). Following the international JV

control typology of Groot and Merchant (2000, p. 582) we examined : (i) two types of cultural controls, expatriate staffing across four areas of management and socialisation practices; (ii) two types of behavioural controls, delegated decision responsibility and parent company communications; and (iii) one type of outcome control, manager performance incentives. The utilisation of each JV control mechanism is briefly reviewed below.<sup>1</sup>

*Expatriate staffing* has been characterised as a common JV cultural control (Baliga & Jaeger, 1984; Chang & Taylor, 1999; Groot & Merchant, 2000). Expatriates are frequently employed in key JV positions, including production, marketing, finance and administration. Underlying the use of expatriate staffing as a cultural control mechanism is evidence that this leads to better transmission of common values and goals between foreign and local partners (Isobe, Makino, & Montgomery, 2000; Lyles & Salk, 1996).

*Socialisation practices* have been found to facilitate the transmission of organisational culture in Chinese JVs (Firth, 1996). Socialisation is a cultural control designed to promote congruent expectations and mutual commitments through which JV managers learn to share common attitudes and knowledge of the organisation (Nonaka & Takeuchi, 1995). Socialisation includes such practices as training, mentoring, technical skill transmission and the development of a common organisational culture (Bauer, Morrison, & Callister, 1998; Worm & Frankenstein, 2000).

*Foreign (Chinese deputy) general manager decision-making responsibility* refers to the degree of

control of strategic and operational decisions that is placed in the hands of the foreign or Chinese (deputy) general manager. The locating of such authority is a fundamental behavioural control challenge for management (Contractor & Lorange, 1988; Groot & Merchant, 2000). Decision authority over various aspects of JV operations has been found to reside with managers who have adequate experience and expertise. For example, foreign partners have been found to be less likely to delegate decision responsibilities to local partners when the local partners are inexperienced (Inkpen & Beamish, 1997).

*Parent company communication* refers to the frequency of operational and financial communication between the venture and the foreign and Chinese parent company. Frequent communication enhances the transparency of partner actions that builds trust and leads to greater cooperation (Lane & Lubatkin, 1998). Viewed in this way, parent company communication acts as a behavioural control. Inkpen and Crossan (1995) report that frequent meetings between venture managers and head office personnel, plant visits and information sharing led to greater collaboration.

*Manager performance incentives* involve the use of budget performance linked rewards to foster outcomes that are in the interests of both JV partners (Khanna, Gulati, & Nohria, 1998). Performance linked rewards promote goal congruence and act as positive motivational control in JVs (Geringer & Hebert, 1989). In the case of fledging JVs, the partners' joint performance expectations have been found to affect the performance incentive system (Groot & Merchant, 2000).

A striking feature of cultural, behavioural and outcome control mechanisms is that their purpose, as defined and explored in the JV literature, has little to do with equity ownership. While each partner's equity share is designed to represent respective asset contributions, the intangible nature of partner assets at the formation of the alliance suggests the limitations of equity as a control determinant. Indeed, we argue that these non-equity contributions are likely to be critical to one aspect of control system design, the choice and the use of various control mechanisms.

<sup>1</sup> In this study, the identification of specific controls came from: the US–Chinese JV literature (for a review, see Child & Faulkner, 1998); interviews with Chinese–US JV auditors and managers of multinationals located in Hong Kong; and site visits to four JVs in mainland China. The five controls were found to be most common out of a larger range of controls that were observed in our site visits. For example, we found the appointment of expatriates frequently existed in JV agreements. Incentive issues, encouraging Chinese responsibility and accountability for decision making, were also crucial. The lack of adequate business orientation among Chinese managers further suggested the importance of socialisation and communication integrating control mechanisms.

Results of JV studies of equity ownership on controls have been inconsistent. Some authors have found evidence that the degree of ownership increases control (Youseff, 1975), while others have reported inconsistent results (Dang, 1977). Groot and Merchant (2000, p. 606) speculated that 'unequal ownership may have significant effects on decision-making (controls)'. Mjoen and Tallman (1997) found no linkage between equity and strategic controls or between equity and operational controls (e.g. the allocation of decision-making responsibility and the use of manager performance incentives). This finding is consistent with earlier work that reported the use of specific control mechanisms to be of more relevance than overall equity control to JV partners (Geringer, 1986; Schaan, 1983).

Equity ownership appears to be a means of controlling the overall direction of an alliance rather than to be a determinant of specific management controls. For the US (Chinese) partner, gaining higher equity ownership guarantees greater control over the composition of the board of directors. As the board appoints the JV's upper-level management, including expatriates (local managers), the dominant partner has the potential to exercise significant control over the long-term strategic direction of the venture. However, this does not axiomatically generalise to other types of control mechanisms that require the cooperation of employees involved in the daily operations of the JV. For example, the influence of dominant equity ownership on cultural, behavioural and outcome controls at the operational level may be stymied by minority partner resistance and lack of cooperation. Recent case studies of JVs have found that partner equity is not the only independent variable explaining variation in the uses of behavioural control mechanisms (Child & Faulkner, 1998). This viewpoint reinforces Child's (1994) contention that majority equity ownership position, by itself, cannot be used to enforce controls over a JV without jeopardising its success. Hence, we propose the following hypothesis:

H1: US equity ownership is positively associated with the proportion of expatriate staffing.

Selective dissemination and protection of foreign partner technical and business knowledge has been speculated by JV researchers to influence cultural, behavioural and outcome controls (Groot & Merchant, 2000; Inkpen & Beamish, 1997). Groot and Merchant (2000, p. 603) argue that 'partners' relative knowledge ... seems to partly explain the partners' differing control foci and their control intensity. 'The acquisition of US partner knowledge, commonly defined as the *relative* level of technical, production, marketing and operational knowledge (and as defined in this study) contributed by the US partner relative to the Chinese partner, is a primary reason for JV formation (Yan & Luo, 2001). Indeed, the willingness of foreign firms to share knowledge has been found to be a primary criterion in the selection of the JV foreign partner by local firms to a much greater degree than for foreign firms in the selection of their local partners (Hitt et al., 2000). In US–Chinese JVs, it is common for the US partner to provide technical information and managerial knowledge. While important, Chinese competencies in terms of local business connections, environmental and institutional knowledge tend not to generate sustained competitive advantage. Rather it is the superior technology and management contributed by the US partner that redress the operational deficiencies of the Chinese partner needed to sustain a competitive position in the Chinese market (Naughton, 1995).

JV partners prosper in part by developing knowledge sharing routines. However, the extent to which the foreign partner shares knowledge with the local partner varies according to both the foreign partner's control abilities and intentions. The level of US partner knowledge affects controls in two ways. First, the US partner has a strong incentive to share non-proprietary technical knowledge and business knowledge with the Chinese partner. The Chinese partner shares this objective. Sharing non-proprietary knowledge allows both partners to generate superior economic returns than would otherwise be the case. Even when the local partner has unlimited access to the foreign partner's skills, the knowledge required to eliminate partner dependency is usually more difficult for the local partner than the foreign partner

to acquire. Thus, high levels of knowledge transmission by the foreign partner have been found to reduce inter-partner conflict by promoting learning for the local partner, but only confirmation of managerial, not technical knowledge, has been found (Steensma & Lyles, 2000).

Second, in JVs where the US partner contributes more knowledge of management, production and patented know-how, greater potential exists for the Chinese partner to expropriate this knowledge and to act opportunistically in a competitive fashion. To avoid this, the foreign partner may take precautions by using controls to deliberately impede the transfer of certain types of knowledge (Tiemessen, Lane, Crossan, & Inkpen, 1997).<sup>2</sup> Despite reforms in China, intellectual property rights remain a serious problem for US firms. There are numerous cases in which local JV partners or local contractors have pirated aspects of product design. Even when foreign partners seek damages through the court system, foreign partners are frustrated by lack of power to enforce payment (Weldon & Vanhonacker, 1999). Accordingly, foreign partners are motivated to protect proprietary resources against opportunism by establishing controls that protect these resources (Dyer & Singh, 1998). The success of knowledge transfer thus not only depends on the communication ability of the foreign partner as well as the receptivity of the less experienced local partner, but also depends on the efficacy of the cultural, behavioural and outcome controls implemented in the JV.<sup>3</sup>

We suggest the following knowledge-control relationships. The first is that both partners should influence cultural, behavioural and outcome con-

trols that assist in the dissemination and receptivity of US partner knowledge, as it is in their mutual economic interest. This knowledge includes all non-proprietary business and technical knowledge that would benefit the alliance. Second, since proprietary knowledge is more likely to be held by the foreign partner, who also has greater experience, the US partner is likely to influence the control system to a greater degree than the Chinese partner. In terms of the individual controls, as US partner knowledge increases, there is a greater need to employ expatriates in upper-level management across functional areas to improve both the protection and transmission of knowledge. Similarly, there is a greater scope for the use of socialisation practices to promote shared organisational values between the JV partners and local partner receptivity to the knowledge of the foreign partner. When US partner knowledge is greater, there is a need for decision responsibilities to be initially assumed by the foreign general manager for overall operational responsibility. This facilitates the gradual knowledge transition to the local partner and encourages eventual acceptance of greater managerial responsibilities once the local partner has gained experience. The gradual values and knowledge transition roles provided by socialisation practices and the locating of decision authority also promote trust which helps mitigate opportunistic behaviour of the local partner in the longer term.

With higher US partner knowledge contribution, we also expect that financial and operational budget communications with the parent firms will be more frequent. The greater frequency of parent company communications should encourage goal setting and the transmission of learning feedback with respect to routine business operations that serves the learning objectives of both partners. In addition, frequent communications enhance partner transparency and cooperation. Finally, there is potentially greater scope for the use of manager performance incentives to promote a business culture wherein managers and their subordinates are made aware of relationships between knowledge, effort and performance outcomes.

Summarising, both partners have an economic incentive to share knowledge through the available

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<sup>2</sup> A reviewer's distinction of controls that both protect proprietary knowledge as well as share non-proprietary knowledge is appreciated.

<sup>3</sup> To date however, evidence on the use of various control mechanisms, similar to those examined in the present study, for the purposes of knowledge transmission is limited to the multinational subsidiary context (Gupta & Govindarajan, 2000). While the ownership structure admittedly differs between JVs and multinational subsidiaries (i.e. knowledge is less likely to be expropriated), both institutional structures face similar challenges in transmitting foreign knowledge to local managers via a common management control system.

mechanisms of the control system but the US partner has an additional concern, the protection of proprietary knowledge. We expect that both partners would perceive controls to be a positive function of the greater relative knowledge contribution of the foreign partner and the US partner more so than the Chinese partner. Based on the above, we propose the following hypotheses:

- H2: US partner knowledge is positively associated with the use of management controls for US and Chinese partners. These controls include: (a) the proportion of expatriate staffing; (b) socialisation practices; (c) delegated decision responsibilities to the foreign general manager; (d) parent company communications; and (e) manager performance incentives.
- H3: The relationship between US partner knowledge and the use of management controls is stronger for the US JV partners than for the Chinese partners. These controls include: (a) the proportion of expatriate staffing; (b) socialisation practices; (c) delegated decision responsibilities to the foreign general manager; (d) parent company communications; and (e) manager performance incentives.

Our field study results and those of others indicate that asset specific investments are important to US–Chinese ventures (for a review, see Child & Faulkner, 1998; Yan & Luo, 2001) and may be expected to have implications for the use of controls. Specific asset investments in this study included: employee development, supplier relationships, regulatory agency relationships, availability of alternative partners and local investments in land, buildings and special purpose machinery. These asset investments correspond closely to Williamson's (1985) classification of asset specific investments in human assets, alternative partners and physical assets. Specialised assets however have little value outside of the relationship, and thus represent increased risk to the asset holder. Hence, the partner with greater specific assets in the venture is naturally more likely to exercise control over these assets.

Local partners are interested in promoting their unique asset contributions by establishing

controls that protect and promote their investments (Dyer & Singh, 1998). The foreign partner also has specific investments in employee training and governmental dispensations that are not transferable outside of the alliance. While both partners have specific investments, the Chinese partner typically has fewer partner alternatives than does the US partner, suggesting that the local partner is more locked into the JV relationship. The local partner also has stronger relational ties to suppliers, government agencies, state employees and other agency relationships than does the foreign partner due to a history of transactions, reputation, cultural affinity and geographical proximity (Beamish & Lu, 2001; Park & Luo, 2001). Finally, since the local partner typically provides the JV property, plant and equipment, the local partner has potentially more physical assets than the foreign partner that are specific to the venture.

Since the local partner's physical, partner and relational assets are more specific to the alliance than the foreign partner's assets, as these specific asset investments increase, the local partner will be more inclined to institute cultural, behavioural and outcome controls to selectively share and protect these assets. Child, Yan, and Ku (1997) have suggested that Chinese partners focus on specific controls as a means of economising on costs and protecting their investments. The Chinese partner is typically protected by regulatory agencies that provide costless monitoring of foreign investors. The resulting collusion provides the Chinese partner with controls not available to the foreign partner. For example, local government bargaining power may be used to strengthen monitoring and control of JV operations (Luo, Shenkar, & Nyaw, 2001). This is more cost effective for the alliance, benefiting both partners.

We suggest the following specific asset-control relationships. As specific asset investments increase, the desire for greater local management staffing and decision responsibilities should increase. The use of socialisation practices also serves to promote local partner specific assets in human resources. For example, Chinese partners often negotiate to include terms for the training of local managers. Many of the large multinational

firms (e.g. Motorola, GE and Lucent) run accelerated management programmes that include training, action learning, project management, expatriate coaching and secondment (Dayao, 1997). The greater the human asset training investment, the greater the need for controls. Equally, as asset specific investments increase, there is a greater requirement for communications with the parent company and local state authorities that are charged with monitoring the JV activities and that ultimately provide a key source of bargaining power for the local partner. Finally, since risk increases as asset specific investments increase, outcome controls serve to mitigate this risk. The larger the potential loss from asset expropriation, for example such as a partner developing his own supplier contacts or leaving the venture, the more the need to implement performance incentives that align partner interests (Parkhe, 1993).

The specific assets contributed by the foreign partner are less prone to the costs of opportunism. For example, investments in site-specific machinery may be lost with less damage to a foreign parent company's strategic mission. The foreign partner also has more partner alternatives. Local partners on the other hand may perceive behavioural and cultural controls to be more effective in protecting physical property, plant and equipment assets, safeguarding regulatory tax and tariff dispensations, and guaranteeing contractual promises subject to local laws. Since access to local distribution channels, suppliers, workforce and regulatory agencies are largely controlled by the local partner, the foreign partner is often in a subordinate position. It is therefore in the foreign partner's interest to have the local partner institute the cultural, behavioural and outcome controls necessary to safeguard asset investments specific to the JV. Based upon the above, we propose the following hypotheses:

H4: Asset specific investments are positively associated with the use of management controls for Chinese and US partners. These controls include: (a) the proportion of non-expatriate staffing; (b) socialisation practices; (c) delegated decision responsibilities to the Chinese

deputy manager; (d) parent company communications; and (e) manager performance incentives.

- 5: The relationship between asset specific investments and the use of management controls is stronger for the Chinese JV partners than for the US partners. These controls include: (a) the proportion of non-expatriate staffing; (b) socialisation practices; (c) delegated decision responsibilities to the Chinese deputy manager; (d) parent company communications; and (e) manager performance incentives.

## Methods

### *Survey instrument design: site visits*

To ensure a valid survey design, we conducted extensive site visits to US–Chinese JVs in Hong Kong, Beijing and Shanghai before administering our survey. The purpose of these visits was to identify in specific terms the controls that were used. We initially developed our instrument in English over a six-month period, during which we held numerous discussions with CPA practitioners and US and Hong Kong general managers who were doing business in China. Based on their comments, we made survey revisions. To ensure internal reliability, a bilingual Chinese research professor translated the final version of the questionnaire into Mandarin. Another Chinese professor, who was formerly a Ministry of Trade and Economic Co-operation (MOFTEC) employee in Shanghai, back-translated, changed and made corrections to the questionnaire.<sup>4</sup> Additional discussions with a partner at Grant Thornton and with the chief accountant of the Shanghai Stock Exchange provided further clarification of both the content and the translation of the Chinese version (see Table 1). We mailed a pilot sample of 20 questionnaires, and followed this with telephone calls to clarify any ambiguities.

<sup>4</sup> A copy of the English and Chinese version of the questionnaire is available from the authors.

Table 1  
Survey items of variable constructs

Variable	#	Item	Response scale
<i>Panel A: control antecedents</i>			
US equity ownership	1.	% US equity held by the respondent's parent company	Percentage US equity held
US partner knowledge (contribution <i>relative</i> to the Chinese partner)		Please indicate the extent to which each of the following factors were provided by the respective partners:	Items 1–3
	1.	In comparison with your partner, who has a better understanding of the production function (manufacturing technology, raw materials price and availability) of the JV?	1 = My partner has a much better understanding
	2.	In comparison with your partner, who has a better understanding of the sales and marketing function (competitors' actions, market demand, product attributes) of the JV?	7 = I have much better understanding (reverse scored for Chinese)
	3.	In comparison with your partner, who has a better understanding of what can be achieved in the JV?	
	4.	Technology—knowledge, patents and production processes	Items 4 and 5
	5.	Management expertise—production, administration etc.	1(7) = Provided largely by foreign (Chinese) parent (reverse scored for both groups)
Asset specific investments (of each individual partner)	1.	Before the JV began, to what extent were alternatives available to enter into other JVs if negotiations failed?	1 = To a very little extent
	2.	To what extent is your investment operation site specific (e.g. imported machinery, special purpose of land)?	7 = To a very large extent (reverse scored for item 1)
	3.	To what extent is your investment human asset specific (heavy investment in training and learning)?	
<i>Panel B: controls</i>			
Expatriate staffing	1.	The number of foreign and number of Chinese finance and administration managers	Percentage of total foreign (expatriates) managers out of the total number of managers in: finance and administration; manufacturing; sales; other
	2.	The number of foreign and number of Chinese manufacturing managers	
	3.	The number of foreign and number of Chinese sales managers	
	4.	The number of foreign and number of Chinese managers in other functions	
Socialisation practices		What is the extent to which each of the following training practices is true of your JV?	
	1.	Chinese managers are sent to the foreign parent company for in-house training and development	1 = To a very little extent
	2.	Accountability and responsibility is encouraged through training programs conducted in-house or locally	7 = To a very large extent
	3.	Information sharing of problem areas is encouraged in operations (e.g. production quality)	

Table 1 (continued)

Variable	#	Item	Response scale
Foreign (Chinese deputy) general manager decision-making responsibility	4.	Frequent meetings are used to encourage interaction between managers and their subordinates	
	5.	Foreign managers perform a coaching role in developing awareness of business skills, quality and costs in the JV	
	6.	Virtually all employees understand the factors that ensure the JV's future success	
		What is the extent to which authority is delegated to the foreign (Chinese) general manager from the Board of Directors to make the following decisions for the joint venture?	
	1.	Development of new products and projects	1 = Extremely low
	2.	The hiring and firing of personnel	7 = Extremely high
Parent company communications	3.	Sourcing of inputs (e.g. materials, parts, etc.)	
	4.	Operating procedures and schedules	
	5.	Pricing of products/outputs	
	6.	Distribution of products/outputs	
Parent company communications	1.	What is the extent to which you communicate with the foreign (Chinese) parent while building the annual operating budget?	1 = Little extent 7 = Great extent
	2.	How frequently does informal communication take place between you and the foreign (Chinese) head office?	Item 2 1 = Quarterly, 2 = Monthly, 3 = Weekly, 4 = Daily
	3.	How often do you report financial data to the foreign (Chinese) parent?	Items 3 and 4
	4.	How often do you report non-financial data to the foreign (Chinese) parent (e.g. quality control reports, labour productivity)?	1 = Annually, 2 = Quarterly, 3 = Monthly, 4 = Weekly
Manager performance incentives	1.	The extent to which compensation (salary) contracts clearly specify how compensation is related to manager performance relative to the division's budget	1 = Extremely low
	2.	The extent to which managers whose division's performance relative to their budget are among the top 25% are given larger financial rewards than those given to managers among the bottom 25%	7 = Extremely high
	3.	The extent to which manager financial rewards increase as their actual performance > budgeted performance	

### *Control antecedents*

#### *US equity ownership*

We measured equity ownership as the percentage of US equity ownership held. The Chinese partner held the remaining percentage. This was consistent with the primary measure of ownership structure in the JV literature (Geringer & Hebert, 1989; Parkhe, 1993).

#### *US partner knowledge*

Knowledge contribution refers to the relative differences in knowledge between the JV partners with respect to knowledge of manufacturing and raw material availability and price; sales and marketing; factors of JV success; technology, patents and proprietary processes; and management expertise in production and administration. The five-item scale comprised three items that we

adapted from the work of Shields and Young (1993) designed to gauge the *relative* amount of information held by each partner in the areas of production, sales and marketing and JV performance capability. Two additional items examined relative partner expertise in the areas of technology (knowledge, patents and production processes) and management expertise (production and administration). We used the relative knowledge contribution by the US JV partner to maintain the consistency of the hypothesised relationships across the two samples.

#### *Asset specific investments*

We developed three items from the work of Williamson (1985) and measures that were used in the Yan and Gray (1994) study. These items included the amount of alternative JV investments that were available to the partners before they entered into the JV, the extent to which the investment was operation or site specific (e.g. imported machinery or special purpose land), and the extent to which the investment was human resource specific (whether there was a heavy investment in training and learning). For the last two items, respondents were asked to indicate the level of their own asset specific investments in the venture.

#### *Controls*

##### *Expatriate staffing*

We measured the proportion of expatriate (non-expatriate) staffing by the percentage of foreign (local) to total managerial representatives in four managerial positions that were found to be most common in US–Chinese JVs (finance and administration, sales and marketing, production and other).<sup>5</sup> We also measured expatriate staffing

<sup>5</sup> We did not test to see how many locals (e.g. mainland Chinese) the foreign partner hired. Typically, and especially at the time of our data collection, most local representatives that were hired as expatriates were those from other Asian countries such as Hong Kong and Taiwan. These representatives were considered to be expatriates in our analysis. Although there may be degrees of difference, the mainland Chinese still perceive Hong Kong and Taiwanese nationals to be expatriates (i.e. they do not afford them the same trust as they do their own).

by the number of managers, controlling for size and found no difference between the measures. We treated each managerial function equally for two reasons. First, apart from the employment of an expatriate as a general manager position, there is no empirical study that has found one function to be more important than another. Second, it is likely that the JVs may place different emphasis across the functions depending on situational factors, such as the specific expertise of the foreign partner (e.g. in production or sales), strategy (market expansion or export) or industry (Yan & Luo, 2001). Our measures did not permit the testing of these factors.

##### *Socialisation practices*

Socialisation was measured using six questions from the 15-item instrument that was developed by Pascale (1985) and adapted by Chow, Shields, and Wu (1999). The items that were removed were those that did not apply to the Chinese environment. The relevant areas include, training programmes, foreign head office visits, coaching, information sharing, meetings and interaction and understanding organisational goals for success.

##### *Foreign (Chinese deputy) general manager decision-making responsibility*

We asked the US (Chinese) respondent how much decision-making authority was given to the US (Chinese deputy) general manager by the board of directors in six areas of operation. We adapted the measure from the work of Killing (1983), who asked managers to assess joint decision making in product pricing, product design, production scheduling, the production process, quality standards, the replacement of a functional manager, budget sales targets, budget cost targets and budget capital expenditure. The questionnaire asked the extent to which the board of directors delegated authority to the general manager in terms of product development, the hiring and firing of personnel, the sourcing of inputs, operating procedures, pricing and distribution.

##### *Parent company communications*

In measuring communication, we began with the frequency of communication construct devel-

oped by Parkhe (1993) and modified it according to the feedback that we received during the site visits. This feedback provided the basis for the design of questions about the frequency of communication between the JV and the parent firms in four areas: budget development, informal communication, operational reporting and financial reporting.

#### *Manager performance incentives*

Functional manager performance incentives were measured using three questions that were adapted from the work of Shields and Young (1993). These questions asked about the extent to which compensation was related to managerial performance; the extent to which managers in the top 25% of performers were given larger rewards than those in the bottom 25%; and the extent to which financial rewards increased as actual performance exceeded budgeted performance. The three items capture the concept of the extent to which incentives are linked to budget performance and have been used as part of a measure of performance rewards in the multinational subsidiary context (Chow et al., 1999).

#### *Respondent sample*

The primary source of firm selection for the survey of US JV managers was the American Chamber of Commerce Directory of companies that do business in China (China Statistical Press, 1996). We targeted 320 companies and made telephone calls to all of the companies' offices in Hong Kong to confirm whether they had a manufacturing JV in China. The application of these criteria generated a data set of 242 firms with JVs that were mainly located in Beijing and Shanghai. The questionnaires were distributed through the Hong Kong representative offices of the US partners. A monetary incentive of HK \$50 (approximately US\$8) accompanied each survey, along with a sponsoring letter from the chief financial controller in the Hong Kong representative office. Extensive follow-up was undertaken, in which all of the JV representative offices in Hong Kong were contacted by telephone during a six-month period in order to check for the completion of the survey.

A total of 242 questionnaires were mailed and 118 were returned, a response rate of 49%. One of the questionnaires was incomplete and thus discarded, which left a sample of 117 responses for analysis.

As it was not possible to pair match the respondents, we drew the Chinese sample from a list of US–Chinese JVs at the Shanghai University of Finance and Economics (SUFE).<sup>6</sup> The list included more than 500 manufacturing JVs that were targeted with the collaboration of two management professors at SUFE. To obtain reliable survey data from the Chinese managers, we followed several procedures, as suggested by site visit interviewees and the China management literature (Adler, Campbell, & Laurent, 1989).<sup>7</sup> We removed all references to the foreign source of the project. The cover letters and return envelopes indicated that this was a China project undertaken by a management professor at SUFE. A sponsoring letter of approval was obtained from MOFTEC and attached to each survey, and a monetary incentive of 30 Yuan (approximately US\$4) accompanied each questionnaire. Of the 500 questionnaires that we mailed, 160 were returned for a response rate of 32%. Fifteen of the questionnaires were incomplete and thus discarded, reducing the sample to 145 responses.

<sup>6</sup> The names of Chinese deputy general managers were not available for the US–Chinese JVs that were listed in the American Chamber of Commerce Directory. Hence, we would have needed the foreign manager to pass on the survey to the Chinese manager for completion, thus violating the anonymity required to obtain a reliable response from the Chinese manager, likely biasing responses.

<sup>7</sup> Apart from language and the relative newness of management research in China, factors such as uncertainty about the sharing of information with strangers (which indicates that there are remnants of paranoia from the Cultural Revolution) and uncertainty over Communist Party support for foreign academic activities in China have fostered a lack of trust in foreign academic research. In addition, a discussion with a China management researcher convinced us that having some level of government approval would facilitate the completion of questionnaires by local managers (Yadong Luo, personal conversation, 1998).

## Results

### *Sample validity and reliability checks*

The survey instrument included several categorical and descriptive questions, in addition to nine parts with responses anchored on seven-item Likert scales. To ensure external validity, we designed the instrument according to previous survey and case study results from the JV and management control literature, as well as observations from our JV site visits. The average date of the formation of the JVs was 1992 for both samples, which meant that the mean age of the ventures was approximately five years when we conducted the survey. The equity split was, on average, 60% US and 40% Chinese for both samples. Firm size ranged from 40 to several thousand employees. Firms were spread across a spectrum of industries in both samples.

The JVs in the US sample averaged 328 employees and those in the Chinese sample averaged 498 employees. The absolute value of the investment in each firm ranged from US\$6 million to US\$28 million.<sup>8</sup> Both groups had, on average, several years of experience with other JV partners, and both expected a 4–6 year payback period on their investments. As prior JV relationships with other partners in developing nations have been found to reduce the foreign partner's dependence on the local partner for information (Chalos et al., 1999), partner experience was examined as a covariate. None of the hypothesised results differed when the covariate was included. Analyses were conducted within each sample, controlling for differences between mean responses on the same variable in the two respondent groups.

<sup>8</sup> In 1996, the average contractual commitment of all foreign enterprises in China was US\$3.02 million (China Statistical Yearbook, 2001). While the value of investment in our sample was larger than the average, it was significantly less than the investments that were made by the largest US firms in China. Luo and O'Connor (1998) reported that the top ten US firms in China invested US\$3.6 billion across 70 JVs, with an average investment of US\$50 million.

We examined survey item reliability in several ways. One reliability check involved Cronbach's (1951) alpha coefficient. To test construct reliability, we calculated alpha coefficients for each set of surveyed items that comprised the measured variables. As can be seen in Table 2, all of the alpha coefficients were above 0.65, a reasonable internal reliability score (Carmines & Zeller, 1979). A second reliability check involved confirmatory factor analysis. Confirmatory rather than exploratory factor analysis was used because each of the variables was based on prior constructs and observational data from our site visits. We compiled the results of the eigenvalue loadings for all of the model variables from a rotated varimax factor structure of the survey data.

The constructs all had eigenvalues greater than one, corroborating the alpha findings. Together the factors explained 65.3% of the variance for the US managers and 65.2% of the variance for the Chinese managers. All of the loadings were greater than 0.40 and quantitatively similar across the constructs for each respondent group, indicating high respondent convergence (Harman, 1967). Table 2 shows the descriptive statistics and correlation matrix of all of the variables for each sample group. Correlations between the independent variables were uniformly low for both groups. Variance inflation and eigenvalue scores of independent variable multicollinearity were low and are reported in Table 2 (Kennedy, 1992).

### *Tests of hypotheses*

Table 2 includes alpha coefficients, means and bivariate correlations for all of the variables for the two respondent samples. To explore the influence of equity ownership, partner knowledge and specific asset investments on management controls, we ran *OLS* regressions of the three independent variables on each control for each respondent sample (10 regressions in all: 5 controls \* 2 respondent samples). This enabled us to test our hypotheses by examining the significance of the slope of each of the three independent variables against each of the five controls for the two

Table 2  
Descriptive statistics and correlation matrix of variables

	US (Chinese) respondents				Foreign general managers (n = 117; R above diagonal), Chinese deputy managers (n = 145; R below diagonal)							
	Means	Range	Alpha		Equity	Know.	Asset	Expat.	Social.	Dec'n	Comm'n	Incentives
US equity ownership (%)	62.62 (61.03)	0–100	–	–	–	0.305***	0.093	0.468***	-0.044	0.102	0.139	0.075
US partner knowledge	28.58 (19.70)**	5–35	0.70 (0.74)	0.470***	–	–	-0.157*	0.324**	0.330***	0.338***	0.256**	0.224*
Asset specific investments	11.77 (11.79)	3–21	0.65 (0.77)	-0.052	0.200**	–	–	0.137	0.193**	0.074	0.104	0.278**
Expatriate staffing	132.24 (109.78)	0–400	0.67 (0.80)	0.394***	0.514***	0.237*	–	–	0.319**	0.302*	0.099	0.255*
Socialisation practices	30.43 (24.14)**	6–42	0.79 (0.86)	0.076	-0.016	0.552***	0.159	–	0.225*	0.267**	0.538***	–
Decision-making responsibility	33.38 (20.74)**	6–42	0.82 (0.94)	-0.361***	-0.689***	0.377***	-0.415***	0.237*	–	-0.036	0.254**	–
Parent company communications	13.88 (10.87)*	4–19	0.66 (0.76)	0.049	0.000	0.489***	0.118	0.607***	0.330**	–	0.431***	–
Manager performance incentives	11.97 (12.67)	3–21	0.82 (0.88)	0.024	-0.105	0.415***	0.249*	0.386***	0.351***	0.179*	–	–

Significance of *t*-statistic for independent sample means *t*-test and Pearson bivariate correlations: \**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001 (two-tailed test). Theoretical range shown. The actual range was the same as the theoretical range for all variables except US equity ownership (5–95), asset specific investments (3–19) and manager performance incentives (3–20).

respondent samples. This indicated the association between each control and equity ownership, partner knowledge and specific asset investments within each group. It also enabled testing the significance of the differences between the slopes of similar relationships across the two samples. We examined the following relationships for each sample.

$$Y_{1...5} = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \varepsilon^* \quad (1)$$

where  $Y_{1...5}$  represented management controls and  $\chi_{1...3}$  represented US equity ownership, US partner knowledge and asset specific investments.<sup>9</sup>

All of the regressions were significant on all controls for the two respondent groups (see Table 3).<sup>10</sup> Hypothesis one (H1) posited that expatriate staffing, a cultural control, would be positively associated with US equity ownership. This was supported. Both US and Chinese respondents perceived expatriate staffing to be positively associated with equity ownership (US  $\beta = 0.413$ ;  $p < 0.01$ ; Chinese  $\beta = 0.175$ ;  $p < 0.05$ ).<sup>11</sup> Consistent with the first hypothesis, equity ownership was not associated with any other control mechanisms from the perspective of both partners. Neither partner perceived equity ownership to be sufficient justification for the adoption of a

<sup>9</sup> Post hoc comparisons of interaction effects were found to be either small or insignificant, and did not change the interpretation of the main-effects (reported in Table 3).

<sup>10</sup> In the regression equations, the adjusted  $R^2$  was significantly higher for the local respondents than it was for the US respondents. Chow tests confirmed the significance of these differences (see Table 3, Panel B).

<sup>11</sup> We also measured the proportion of the board of directors representing the foreign partner. Child and Yan (1999) model this construct as mediating the relationship between equity ownership and the employment of expatriates. This relationship was evident. US equity was significantly correlated with foreign board percentage for both the foreign (0.846;  $p < 0.01$ ) and the Chinese (0.325;  $p < 0.01$ ) samples. The foreign board percentage in turn was significantly correlated with expatriates for both the foreign (0.333;  $p < 0.01$ ) and the Chinese (0.603;  $p < 0.01$ ) samples. This is also consistent with the theory for H1.

Table 3

Standardized OLS regression coefficients of equity ownership, partner knowledge and asset specific investments on individual controls : US (Chinese) respondents

	Expatriate staffing	Socialisation practices	Decision-making responsibility	Parent company communications	Performance incentives
<i>Panel A: standardized regression coefficients</i>					
US equity ownership	0.413*** (0.175**)	-0.194** (0.092)	0.019 (-0.055)	0.089 (0.050)	-0.017 (0.083)
US partner knowledge	0.080 (0.221***)	0.364*** (0.029)	0.329*** (-0.619***)	0.220* (0.055)	0.178* (-0.080)
Asset specific investments	-0.108 (0.114)	0.127 (0.561***)	0.013 (0.277***)	0.052 (0.500***)	0.247*** (0.407***)
Adjusted R <sup>2</sup>	0.175*** (0.101***)	0.134*** (0.302***)	0.089*** (0.541***)	0.049** (0.231***)	0.089*** (0.162***)
<i>Panel B: t-statistics of differences in standardized regression coefficients between US and Chinese respondents</i>					
US partner knowledge	-0.420	-3.030***	1.634*	1.252	-2.129**
Asset specific investments	-1.860*	4.232***	-3.835***	4.831***	0.797
Chow F statistic (d.f. 8, 255)	1.478	15.686***	12.021***	14.812***	1.839*
: b/w US and Chinese regressions					

Significance levels: \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$  (two-tailed test).

Tests of multicollinearity: a high variance inflation factor (VIF) of the regression coefficient upon the error term is one indication of multicollinearity. 'For standardized data,  $VIF_i > 10$  indicates harmful collinearity' (Kennedy, 1992, p. 183). The VIF factors ranged from 1.002–1.919. The condition indices (CIs) ranged from 2.094–13.582 between antecedents, below the moderate dependency range suggested by Belsley (1991, p. 56).

broader set of behavioural, outcome and cultural controls.

Hypothesis two (H2) predicted that perceptions of higher US partner knowledge relative to the Chinese partner would be positively related to cultural, behavioural and outcome controls for both partners. For the US respondents, four out of the five controls were significant in the expected direction (socialisation practices  $\beta = 0.364$ ;  $p < 0.01$ ; foreign decision-making responsibility  $\beta = 0.329$ ;  $p < 0.01$ ; parent company communications  $\beta = 0.220$ ;  $p < 0.10$ ; and manager performance incentives  $\beta = 0.178$ ;  $p < 0.10$ ). These findings supported hypotheses H2b, H2c, H2d and H2e for US respondents. For the Chinese respondents, two of the five controls were significant and positive (expatriate staffing  $\beta = 0.221$ ;  $p < 0.01$  and foreign decision-making responsibility, as shown by the negative beta for Chinese decision-making responsibility  $\beta = -0.619$ ;  $p < 0.01$ ). These findings support H2a and H2c for Chinese respondents. *T*-tests of the  $\beta$ s on each control between the two samples indicated that the US partner perceived socialisation practices ( $t = -3.030$ ;  $p < 0.01$ ), foreign decision-making responsibilities ( $t = 1.634$ ;  $p < 0.10$ ) and manager performance incentives ( $t = -2.129$ ;  $p < 0.05$ ) to

be significantly greater than did the Chinese partner, supporting H3b, H3c and H3e.<sup>12</sup>

Hypothesis four (H4) proposed that asset specific investments would be positively associated with the use of controls for the Chinese partner. Four of the five controls were significant and in the expected direction for the Chinese respondents (socialisation practices  $\beta = 0.561$ ;  $p < 0.01$ ; Chinese decision-making responsibility  $\beta = 0.277$ ;  $p < 0.01$ ; parent company communi-

<sup>12</sup> We ran various sensitivity tests on the significance of the regressions, by including size (# of employees) and JV duration and found the significance of the coefficients to be unchanged. We tested other formulas for the measure of expatriate staffing to provide more assurance of our findings. For example, we tested the same model using a measure of the absolute numbers of expatriates with size included. The results were unchanged. When the percentage of expatriate staffing in each functional category was entered in the regression model, the US partner knowledge coefficient was significant for production and sales (Chinese respondents only), but was insignificant for the percentage of expatriate staffing in the finance and administration category. The regression model for the percentage of expatriates in the "other" category was not significant. While these results admittedly are ad hoc, it is plausible that the consistent results found for only manufacturing and sales managers could reflect the fact that these functions are areas of greater foreign partner expertise.

cations  $\beta = 0.500$ ;  $p < 0.01$ ; and manager performance incentives  $\beta = 0.407$ ;  $p < 0.01$ ). This supports H4b, H4c, H4d and H4e. Hypothesis four (H4) predicted that perceptions of asset specific investments would be positively related to the use of management controls for the US partner as well. Only one of the five controls was found to be significant (manager performance incentives  $\beta = 0.247$ ;  $p < 0.01$ ), supporting H4e. *T*-tests of  $\beta$  differences on controls between Chinese and US respondents were significant in the expected direction for Chinese partners on three of the five controls. As specific asset investments increased, Chinese respondents perceived significantly more socialisation practices ( $t = 4.232$ ;  $p < 0.01$ ), more decision-making responsibility for the Chinese deputy general manager ( $t = -3.835$ ;  $p < 0.01$ ), and greater parent company communications ( $t = 4.831$ ;  $p < 0.01$ ) than did the US respondents. This supports H5b, H5c and H5d.

## Discussion

Recent observations from field studies of US–Chinese JVs have led to propositions regarding the determinants of JV control mechanisms. We framed the propositions as testable hypotheses of the effects of partner equity ownership, knowledge dependence and asset specific investments on JV controls. Controls suggested by the joint venture literature have included expatriate staffing, socialisation practices, delegated decision responsibilities, parent company communications and incentives. We examined the hypothesised control determinants from the perspective of both JV partners. Based on field visits and survey data, we found that partner equity ownership influenced expatriate staffing but none of the other control mechanisms. Relative to partner knowledge dependence and specific asset investments, bargaining dominance conferred by majority equity ownership appeared to offer little explanation of JV control mechanisms. This finding concurs with Mjoen and Tallman (1997), who found the role of equity as a determinant of control to be ‘highly questionable’ and who suggested instead that

controls over JV activities seemed to be more descriptive of actual JV control mechanisms.

Consistent with evidence of motives in JV partner selection (Hitt et al., 2000), we found knowledge dependency and asset specific transaction costs to be determinants of controls to varying degrees for each partner. Beamish and Delios (2001), and Dyer and Singh (1998), argue that intangible partner knowledge and specific asset contributions determine the control mechanisms of the venture. Our results partly supported these propositions and others developed from recent case studies (Child & Faulkner, 1998; Yan & Luo, 2001). The descriptive results indicated that US partner knowledge was perceived to be significantly greater than that of the Chinese partner from both partners’ perspectives. Statistically, US partner knowledge relative to the Chinese partner influenced a broad set of controls, suggesting that partner knowledge has some bearing upon the design of the controls used in the venture. The US partner perceived socialisation practices, foreign manager decision responsibilities, parent company communications and manager performance incentives to be effective control mechanisms that were positively related to the diffusion of US knowledge. As US knowledge increased, the Chinese partner also preferred greater foreign manager decision responsibilities as well as greater expatriate staffing. This suggests that the Chinese partner was willing to give up decision control in cases where a knowledge deficiency existed.

In contrast to the US partner, however the Chinese partner did not perceive any positive relationships between US knowledge and socialisation practices, parent company communications or manager performance incentives. These strong perceptual differences indicate fundamental disagreements between the partners with respect to the efficacy of several controls in transmitting partner knowledge and improving learning in the alliance. It appears critical to determine: what knowledge each partner can and is willing to contribute to the JV; what strategic motives underlie this knowledge contribution; and whether this contribution makes each partner better off in the long run. Conceivably, these control differences were deliberate on the part of the US

partner, who was perhaps reluctant to share certain knowledge that might eventually be used by the Chinese partner as a JV rival. Alternatively, the controls may simply not have been put to optimal use from the perspective of the local partner in disseminating knowledge.

Specific asset investments had significant effects on the promulgation of management controls from the viewpoint of the Chinese partner, but to a lesser extent from the viewpoint of the US partner. Investments in specific assets by the Chinese partner were positively and strongly associated with manager performance incentives, socialisation, parent company communications, and more Chinese manager decision-making responsibilities. The use of these controls was perceived to increase as Chinese partner specific asset investments increased, thus supporting the evidence for transaction cost minimisation through JV controls found by Mjoen and Tallman (1997). US partners in contrast perceived only manager performance incentives to be related to increases in their specific asset investments, suggesting that the foreign partner had little confidence in control mechanisms to protect their specific asset investments.

Knowledge dependence and specific asset investments mirror the different contributions, goals and motives of each partner. Since the Chinese partner is knowledge dependent on the foreign partner, control mechanisms must be finely balanced between cooperative learning for the good of the venture and competitive learning that threatens the venture's existence. Similarly, since the US partner is dependent upon the specific assets contributed by the Chinese partner, control mechanisms must be finely balanced between maintaining local relationships for the good of the venture and fostering relationships that encourage partner defection. The different partner perceptions of controls that were found are an indication of perhaps unavoidable control misalignment between the partners. Partner differences in their perceptions of control mechanisms are determined largely by their respective motives. This represents an inherent source of instability within the JV (Child & Faulkner, 1998; Yan & Luo, 2001). The design of the JV control system serves to manage but not eliminate both collaborative and compet-

itive forces that are simultaneously at work within the alliance.

The limitations of this study must be considered when interpreting the significance of its conclusions. Response anonymity did not permit pairwise matching of US–Chinese responses by firm. Pairwise matching of specific JV partners would have minimised inter-firm variability. Statistical checks indicated that the US and Chinese respondent samples did not significantly differ in size, industry range, investment, or alliance duration. Response bias between the two samples remains a possibility. Similarities or differences found in US–Chinese JVs are not necessarily generalisable to other JV environments. Finally, although the survey metrics were based upon extensive site visits and the current literature, important variables may have been omitted. Future research should corroborate these findings with additional field studies in other JV environments, incorporating other antecedents and controls. Exploring the relation of controls to JV instability and performance would also be a worthwhile extension of the present study.

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